

WHAT IS CLAIMED IS

1. A routing control method in a mixed environment of a hierarchial network and a non-hierarchial network, comprising:
- 5 assigning the non-hierarchial network a virtual hierarchy number that corresponds to a hierarchy number in the hierarchial network,
- 10 attaching the virtual hierarchy number to a packet to be relayed at a router located at an entrance from the non-hierarchial network to the hierarchial network when the packet is to be relayed between non-hierarchial networks via the hierarchial network,
- 15 performing a hierarchial routing control by the virtual hierarchy number within the hierarchial network, and
- 20 removing the virtual hierarchy number from the packet to be relayed at a router located at an exit from the hierarchial network to the non-hierarchial network.

2. The routing control method in the mixed environment of the hierarchial network and the non-hierarchial network as claimed in claim 1, wherein
- 25 an address of the non-hierarchial network is accommodated in an interface identification information block of an address format of the hierarchial network, and the virtual hierarchy
- 30 number is accommodated in a hierarchy information block of the address format of the hierarchial network for conventional packet relaying defined in the hierarchial network and transmitting routing information.

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3. The routing control method in the mixed environment of the hierarchial network and the non-

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hierarchical network as claimed in claim 2, wherein each router of the hierarchical network comprises a hierarchical routing table that performs routing search by using only the hierarchical information block as a key, and a conventional routing table that performs routing search by using the hierarchical information block hierarchical information and the interface identification information block as keys.

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4. The routing control method in the mixed environment of the hierarchical network and the non-hierarchical network as claimed in claim 3, wherein each router of the hierarchical network uses the hierarchical routing table when relaying a packet between the hierarchical network and another hierarchical network.

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5. The routing control method in the mixed environment of the hierarchical network and the non-hierarchical network as claimed in claim 3, wherein each router of the hierarchical network uses the conventional routing table when relaying a packet from the hierarchical network to the non-hierarchical network, and from the non-hierarchical network to the hierarchical network.

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6. The routing control method in the mixed environment of the hierarchical network and the non-hierarchical network as claimed in claim 5, wherein the router located at a boundary of the non-hierarchical network and the hierarchical network recognizes a packet relay from the non-hierarchical network to the hierarchical network, and from the hierarchical network to the non-hierarchical network, by using a receiving interface name and a transmission interface name when relaying the packet.

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7. A routing control apparatus in a mixed environment of a hierarchial network and a non-hierarchial network, comprising:

- 5 virtual hierarchy number assigning means
for assigning the non-hierarchial network a virtual
hierarchy number that corresponds to a hierarchy
number in the hierarchial network, and for attaching
the virtual hierarchy number to a packet to be
10 relayed at a router located at an entrance from the
non-hierarchial network to the hierarchial network
when the packet is to be relayed between non-
hierarchial networks via the hierarchial network,
 routing control means for performing a
15 hierarchial routing control by the virtual hierarchy
number within the hierarchial network, and
 virtual hierarchy number removing means
for removing the virtual hierarchy number from the
packet to be relayed at a router located at an exit
20 from the hierarchial network to the non-hierarchial
network.

8. The routing control apparatus as
claimed in claim 7, wherein the virtual hierarchy
25 number assignment means accommodates an address of
the non-hierarchial network in an interface
identification information block of an address
format of the hierarchial network, and accommodates
the virtual hierarchy number in a hierarchy
30 information block of the address format of the
hierarchial network for performing conventional
packet relay defined in the hierarchial network and
transmitting routing information.

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9. The routing control apparatus as
claimed in claim 8, wherein each router of the

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hierarchical network comprises a hierarchical routing table that performs routing search by using only the hierarchical information block as a key, and a conventional routing table that performs routing search by using the hierarchical information block
5 hierarchical information and the interface identification information block as keys.

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10 The routing control apparatus as claimed in claim 9, wherein each router of the hierarchical network comprises hierarchical routing search means that performs routing search using the hierarchical routing table when relaying a packet between the hierarchical network and another
15 hierarchical network.

11 The routing control apparatus as claimed in claim 9, wherein each router of the hierarchical network comprises conventional routing search means that performs routing search using the
20 conventional routing table when relaying a packet from the hierarchical network to the non-hierarchical network, and from the non-hierarchical network to the hierarchical network.
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12 The routing control apparatus as claimed in claim 11, wherein the router located at a boundary of the non-hierarchical network and the hierarchical network comprises recognition means that
30 recognizes a packet relay to be from the non-hierarchical network to the hierarchical network, and to be from the hierarchical network to the non-hierarchical network, using a receiving interface name and a transmission interface name when relaying
35 the packet.